

Appl. No. : 09/997,396
Filed : November 28, 2001

REMARKS

Claims 1-50 and 52-53 are pending in the present application. Of these, Claims 33-45 and 51 have been withdrawn from consideration as being directed to a non-elected species.

Allowable Subject Matter

Applicants are pleased to note that Claims 14-32, 52 and 53 have been allowed. In addition, Claims 7, 10 and 11 were found to be allowable if rewritten in independent form. However, in view of the patentability of Claim 1, from which these claims depend, Applicants have not amended these claims to independent form at this time.

Claim Rejections Under 35 U.S.C. § 112

Claim 47 has been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. In particular, the Examiner found that the specification does not include sufficient written description to allow one of skill in the art to deposit the conductive layer by ALD as claimed.

Applicants respectfully disagree. Paragraphs [0045] and [0046] discuss producing a pseudo-spin valve comprising a first ferromagnetic layer, a conductive layer, and a second ferromagnetic layer. Paragraph [0047] indicates that the layers in the pseudo-spin valve sandwich can be formed by atomic layer deposition and specifies the steps in the atomic layer deposition process. In addition, paragraph [0014] indicates that the metal films for magnetic devices can be fabricated by atomic layer deposition. Paragraphs [0056]-[0064] describe the atomic layer deposition process and provide exemplary source chemicals. Thus, Applicants submit that based on the disclosure in the specification, one of skill in the art would be able to deposit a conductive layer by atomic layer deposition as recited in Claim 47 and request withdrawal of this rejection.

The Examiner also found that with respect to Claim 8 there is insufficient antecedent basis for the recitation "the elemental metal." Applicants have amended Claim 8 herein to depend from Claim 7. As Claim 7 recites reducing the metal oxide to elemental metal, Applicants submit there is sufficient antecedent basis for the recitation of the elemental metal in Claim 8 and request withdrawal of this rejection.

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Claim Rejections Under 35 U.S.C. § 102

Claims 1-6, 9 and 12-13 were rejected under 35 U.S.C. § 102(e) as anticipated by Sneh (U.S. Patent No. 6,551,399). In particular, the Examiner found that Sneh discloses fabricating a metal-insulator-metal capacitor by atomic layer deposition.

Applicants respectfully submit that Sneh has no teaching or suggestion of depositing a first ferromagnetic layer, depositing a dielectric layer over the first ferromagnetic layer and depositing a second ferromagnetic layer over the dielectric layer as recited in Claim 1. In fact, Sneh has no teaching at all regarding the deposition of a ferromagnetic layer. Thus, Applicants submit that Claim 1 is not anticipated by Sneh. In addition, as Claims 2, 6, 9, and 12-13 depend from Claim 1 and contain all of the limitations thereof in addition to further distinguishing features, Applicants submit that they are also not anticipated by Sneh. Thus, Applicants request withdrawal of this rejection.

Claims 46 and 48-50 were also rejected under 35 U.S.C. § 102(e) as anticipated by Sneh. Here, the Examiner found that Sneh discloses a method for fabricating a magnetic memory cell comprising depositing a first ferromagnetic layer by ALD, depositing a conductive layer over the first ferromagnetic layer by ALD and depositing a second ferromagnetic layer by ALD.

Applicants respectfully disagree and again submit that there is no teaching or suggestion in Sneh of depositing any ferromagnetic layer, much less of depositing a ferromagnetic layer by atomic layer deposition. As Claim 46 recites depositing a first ferromagnetic layer by atomic layer deposition, depositing a conductive layer over the first ferromagnetic layer, and depositing a second ferromagnetic layer over the conductive layer, Applicants submit that Claim 46 is not anticipated by Sneh. Claims 48-50 depend from Claim 46 and contain all the features thereof in addition to further distinguishing features. Thus, Applicants submit that Claims 48-50 are also not anticipated by Sneh and request withdrawal of this rejection.

Claim Rejections Under 35 U.S.C. § 103

Claim 49 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Sneh in view of U.S. Patent No. 6,617,173, (the '173 patent). In particular, the Examiner indicated that Sneh discloses all of the claimed subject matter but fails to expressly disclose a first ferromagnetic layer comprising NiFe and a second ferromagnetic layer comprising Co. The Examiner found

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that this deficiency was made up for by the '173 patent in which an FM/I/FM tunneling junction device is formed comprising NiFe and Co as the FM material.

Applicants respectfully submit that, as discussed above, Sneh does not disclose the deposition of any ferromagnetic layer by any process. In addition, there is no suggestion in the Sneh reference to deposit a ferromagnetic layer at all. Further, there is no teaching or suggestion in the '173 patent to deposit one or more of the FM layers on ALD. As a result, there is no motivation to combine the first Sneh reference with the '173 patent. Thus, Applicants request withdrawal of this rejection.

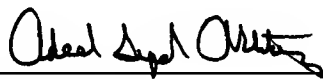
Conclusion

In view of the amendment and arguments presented above, Applicants submit that the present application is in condition for allowance and respectfully request the same. If any issues remain, the Examiner is invited to telephone Applicants' representative at the number provided below in order to resolve such issues promptly.

Respectfully submitted,

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